CLAIMS

What is Claimed is:

1. An grant generator for selecting a switching request to be granted,

5 comprising:

a structure comprising a plurality of binary round robin tree (BRRT) cells; and

a preference pointer coupled to said plurality of BRRT cells wherein said

preference pointer provides a control signal to said BRRT cells.

10 2. The grant generator as recited in Claim 1 wherein said grant generator is a

functionality within a crossbar switch structure.

3. The grant generator as recited in Claim 1 wherein said grant generator

comprises a quadrature based grant generator.

15

4. The grant generator as recited in Claim 3 wherein said quadrature based grant

generator services four quadrants.

5. The grant generator as recited in Claim 4 wherein each of said four quadrants

20 corresponds to a plurality of ports, wherein each said quadrant comprises a plane, and

wherein said structure is expressed within each said plane.

6. The grant generator as recited in Claim 4 wherein said plurality of ports

comprises eight ports and wherein a total of 32 ports is serviced.

25

7. The grant generator as recited in Claim 1 wherein said BRRT cells comprise a

type selected from the group consisting essentially of basic BRRT cells, 'enable' BRRT

cells, and 'single grant' BRRT cells.

8. The grant generator as recited in Claim 7 wherein said structure further comprises an arrangement of said BRRT cells wherein sad arrangement comprises a

5 cascade.

9. The grant generator as recited in Claim 8 wherein said cascade comprises:
a first stage of BRRT cells, wherein said first stage comprises a first even positive whole number;

10 a second stage of BRRT cells coupled to said first stage, wherein said second stage comprises a second even positive whole number;
a third stage BRRT cell coupled to said second stage.

10. The grant generator as recited in Claim 9 wherein a first half of said first stage

15 cascade into a first half of said second stage.

11. The grant generator as recited in Claim 9 wherein a second half of said first stage cascade into a second half of said second stage.

20 12. The grant generator as recited in Claim 9 wherein said second stage cascades into said third stage BRRT cell.

13. The grant generator as recited in Claim 9 wherein said cascade further comprises a fourth stage BRRT cell.

25

14. The grant generator as recited in Claim 13 wherein said cascade further comprises a fifth stage BRRT cell.

15.   The grant generator as recited in Claim 14 wherein said the BRRT cells of said first stage comprise 'enable' BRRT cells.

16.   The grant generator as recited in Claim 14 wherein said the BRRT cells of said second stage and said third stage comprise basic BRRT cells.

17.   The grant generator as recited in Claim 14 wherein said the BRRT cells of said fourth stage and said fifth stage comprise 'single grant' BRRT cells.

18.   The grant generator as recited in Claim 1 further comprising a plane, wherein said structure .

19.   A method for quadrature based round robin grant generation, comprising:
        receiving a request;
        selecting a quadrant;
        servicing said request; and
        generating a grant corresponding to said request.

20.   The method as recited in Claim 19, further comprising determining that said quadrant is due for service, wherein said determining is performed after said receiving and prior to said selecting.

21.   The method as recited in Claim 19, further comprising ascertaining that a count has been reached, wherein said ascertaining is performed after said determining and prior to said selecting.

22.   The method as recited in Claim 19, further comprising determining that a multicast service request is pending, wherein said determining that a multicast service request is pending is performed prior to said selecting and wherein said selecting is based upon a priority assigned to said multicast service request.

5

23.   A binary round robin tree (BRRT) cell circuit comprising:

an 'OR' gate for generating a signal 'Req[l, $l+1$] from an input "Req[l, l]' and an input 'Req[$l+1$, l]'; and

a plurality of 'AND' gates coupled to said 'OR' gate.

10

24.   The BRRT circuit as recited in Claim 23 wherein said 'AND' gates generate a grant 'Gnt[l, l]' and a grant 'Gnt[$l+1$, l]' from a plurality of inputs, wherein said inputs are selected from the group consisting essentially of a control signal and said inputs 'Req[l, l]' and 'Req[$l+1$, l]'.